

REMARKS

Claims 1-59 are pending and claims 1-7, 11-36 and 39-50 are withdrawn from consideration. Applicants traverse the rejections for the reasons discussed herein. Entry is respectfully requested.

The Claims Are Patentable Under 35 USC § 102/103

A. Rejection under 35 USC § 102(b)

Claims 8-10, 38, and 56 are rejected under 35 U.S.C. § 102(b) as being anticipated by Grot (U.S. 4,433,082).

The Office Action takes the position that Grot discloses each feature of the foregoing claims.

B. Rejections under 35 USC § 103(a)

Claims 8 and 51-56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bekiarian et al (U.S. 2004/0167289) and Doyle et al (U.S. 6,140,436) and as evidenced by Odian (*Principles of Polymerization*, see attached pages).

Claims 9-10 and 38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bekiarian et al (U.S. 2004/0167289) and Doyle et al (U.S. 6,140,436) as evidenced by Odian (*Principles of Polymerization*, see attached pages) as applied to claims 8, and 51-56 above and further in view of Grot (U.S. 4,433,082).

Claims 37 and 57- 59 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bekiarian et al (U.S. 2004/0167289) in view of Doyle et al (U.S. 6,140,436).

Bekiarian is cited as disclosing i) a fluoropolymer comprising a nonionic monomer having pendant side chains comprising the group -SO₃NH₄, obtained via alcohol hydrolysis; ii) a method wherein the polymer is obtained by emulsion polymerization to obtain a liquid

dispersion of the fluoropolymer; and iii) a process of emulsion polymerizing vinylidene fluoride (VDF) copolymerized with a non-ionic monomer and a pendant group to produce a liquid dispersion.

According to the Examiner, it is well known in the art that emulsion polymerization yields spherical particles as evidenced by Odian. Odian also allegedly evidences particle sizes of 50 to 200 nm.

The Examiner assumes that the features of claim 55 are inherent in the references.

The Examiner concedes that Bekiarian does not explicitly disclose that the acid/salt group containing polymer is dispersed in a medium to form a liquid dispersion.

Doyle et al is cited as disclosing a polymer comprising VDF and a perfluoroalkenyl monomer having pendant groups, wherein both the pendant side-chains and olefin comprising the fluorinated sulfonyl group are hydrolyzed to SO_3M , where M is a univalent metal. Doyle et al is also cited as disclosing that the preparation of the copolymerization of VDF and the fluorinated side chains can either be copolymerized together first and then hydrolyzed, or hydrolyzed first and then copolymerized. The hydrolysis process disclosed by Doyle et al allegedly involves contacting the sulfonyl fluoride containing monomer or polymer with a mixture of alkali metal carbonate and methanol, and Doyle et al is further is cited as disclosing that the sulfonyl fluoride copolymer resin can be hydrolyzed by suspension in a hydrolyzing medium.

The reason for the rejection is that, because both Bekiarian et al and Doyle are drawn to fluoropolymers comprising sulfonyl groups and hydrolysis of these copolymers via alkali hydrolysis, it would have been obvious to include the method steps disclosed by Doyle et al in

formation of the fluoropolymer disclosed by Bekiarian et al with a reasonable expectation of success.

The Examiner also concedes that Bekiarian et al fails to disclose i) that the liquid dispersion comprising 2 to 80 wt % fluoropolymer; and ii) that water comprises 10 to 100 wt % of the liquid medium; and iii) that the fluoropolymer dispersion is produced without drying the fluoropolymer precursor and fluoropolymer

Grot is cited as disclosing that the fluoropolymer amounts recited in claim 9, the claimed range of 10 wt to 100 wt % of the liquid medium in claim 10, and the mixture recited in claim 38.

Doyle et al is additionally cited as disclosing the remaining features of claims 37 and 57-58.

The Examiner takes the position that it would also have been obvious to include the method steps disclosed by Doyle et al in forming the fluoropolymer disclosed by Bekiarian et al with a reasonable expectation of success.

Applicants respectfully traverse all the rejections for the following reasons.

The fluoropolymer dispersion of independent claim 8, from which claim 9-10, 38 and 51-56 depend, comprises a fluoropolymer solid composition dispersed in a liquid medium, the fluoropolymer solid composition containing a fine particle comprising a fluoropolymer, the fine particle comprising a fluoropolymer containing a substantially spherical fluoropolymer fine particle in a proportion of at least 25% by mass.

The fluoropolymer dispersion of independent claim 37, from which claims 57-59 depend, is produced without drying the fluoropolymer precursor and fluoropolymer. The fluoropolymer

precursor is obtained by emulsion polymerization. Hence, the dispersion comprises the spherical fluoropolymer fine particle.

In contrast, the art cited nowhere discloses or suggests a dispersion comprising spherical fluoropolymer fine particles.

In particular, the process for making a liquid composition in Grot et al comprises contacting the polymer with an aqueous liquid medium including water and optionally a second liquid component. See col. 5, lines 19-35. The polymer employed in the process may take several forms, e.g., fluff, cubes, tubing, coating on a substrate, or is part, or all, of a film or membrane. Nonetheless, such processes cannot produce spherical fluoropolymer fine particles. Rather, they produce rod-like or thread-like particles.

Bekiarian et al. describes drying the washed polymer to yield white granular polymer in its Example at paragraph [0048]. Granular polymers or films were also used in its other Examples.

Moreover, the dispersion of the present invention would not have been obvious over the combination of Bekiarian et al and Doyle et al. That is, the Examiner states that Doyle discloses that the preparation of the copolymerization of VDF and the fluorinated side chains can either be i) copolymerized together first and then hydrolyzed; or ii) hydrolyzed first and then copolymerized. However, if hydrolyzed first and then copolymerized, spherical fluoropolymer fine particles cannot be obtained. Likewise, if first copolymerized and then hydrolyzed, spherical fluoropolymer fine particles cannot be obtained. This is because Doyle et al does not disclose producing the dispersion without drying the fluoropolymer precursor and fluoropolymer. Rather, Doyle discloses the copolymer resin as being subjected to hydrolysis by *dissolution* or *suspension* in a hydrolyzing medium. The copolymer resin is a white polymer

obtained after drying at 25°C. See Examples 1 and 7; note especially that VDF/PSEPVE copolymer ($T_g = -23^\circ\text{C}$) easily aggregates.

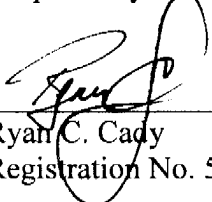
Odian et al. discloses final polymer particles, spherical in shape, obtained by emulsion polymerization. See page 371, line 27. Odian et al involves a polymerization of water soluble monomers, such as styrene or vinyl acetate. See page 339, lines 4-7. Nonetheless, Odian et al is thus also inapplicable because polymer particles obtained from water-soluble monomers, such as fluorocarbon ethers in the form of an acid or acid salt, are rod-like or thread-like.

For at least the foregoing reasons, none of claims 8-10, 37-38 or 51-59 are anticipated by, nor would they have been obvious over, any of the references cited, either alone or in combination.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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